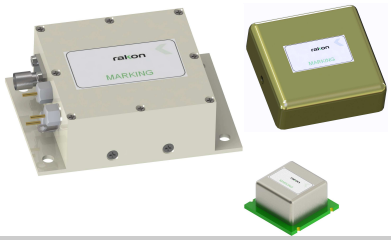
LNO 100

OCXO LNO 100

Specific request can be addressed to RAKON info@rakon.fr

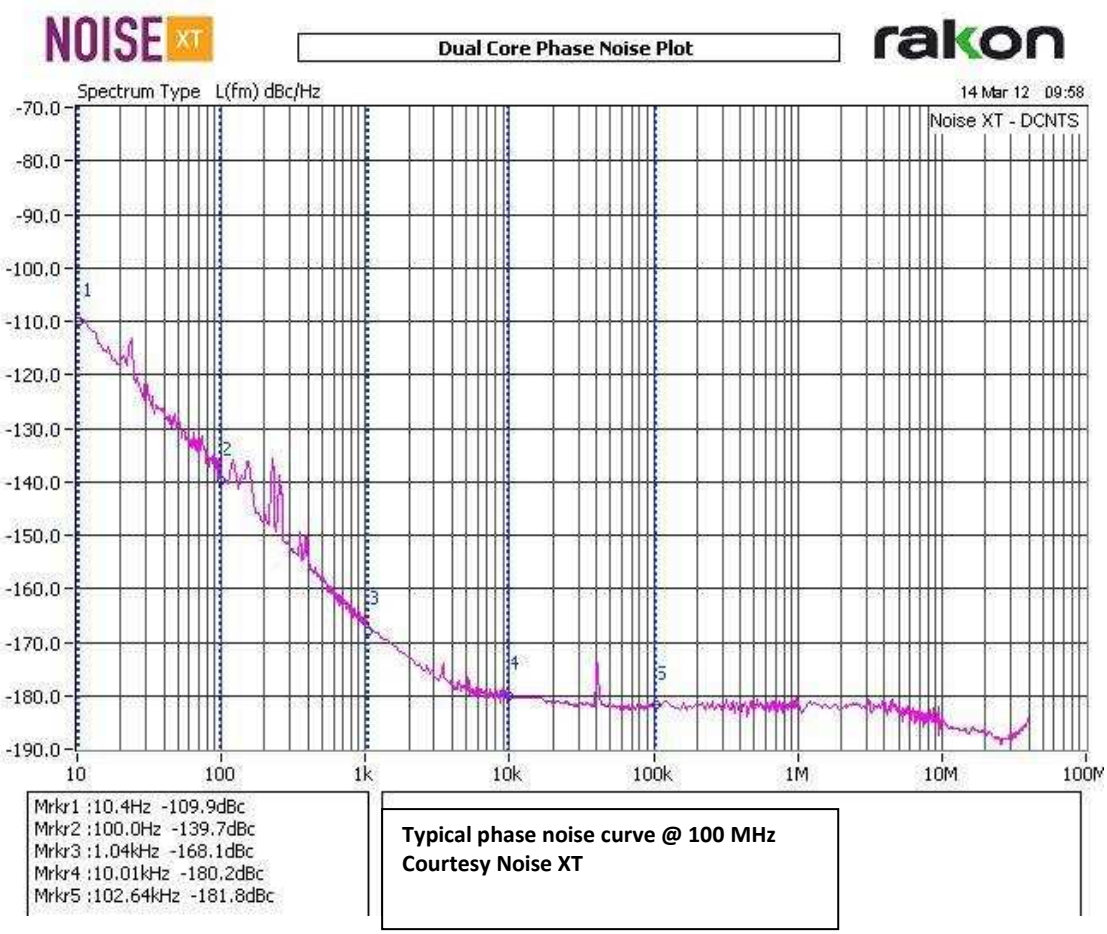
Product Description

This Low Noise Oven Controlled Crystal Oscillator available in different formats from 51x51x25 mm (2"x2"x1") till 25x25x12 mm (1"x1"x0.5"), is specially designed to meet the request of the most demanding phase noise applications in the instrumentation and defence industries.
The LNO 100 @ 100 MHz can be provided with a guaranteed phase noise level of up to -165 dBc/Hz @ 1KHz and a G-sensitivity of up to 0.5 ppb/G (Gamma).



Features

- Low Noise Oscillator (LNO), Oven Controlled Crystal Oscillator (OCXO)
- Frequency: 80 to 125 MHz
- Guaranteed low phase noise @ 100 MHz:
  -165 dBc/Hz @ 1kHz
  -178 dBc/Hz @ 10kHz
- Supply Voltage: +12V
- Pin through hole, SMD package or with connectors
- Frequency Stability vs. Temperature: ± 0.1ppm
- Ageing: from ± 2ppm over 10 years



Typical phase noise curve @ 100 MHz
Courtesy Noise XT

Applications

- Reference for phase noise measurement
- Test equipments
- Military communication
- Synthesizers
- Radars

Specifications

1. Environmental conditions

Parameters	Conditions/remarks	Min	Nom	Max	Unit
Operating Temperature	Option A	0	25	70	°C
	Option B	-20	25	70	°C
	Option C	-40	25	85	°C
Switch-on Temperature	TSo	-40		85	°C
Non-Operating Temperature	TNOp	-55		125	°C
Sine Vibration	Level as per MIL-PRF-28800F, Class 3, test equipment				
Shock	Level as per MIL-PRF-28800F, Class 3, test equipment				

2. Electrical interface

Parameters	Conditions/remarks	Min	Nom	Max	Unit
Power supply	Option 12	11.40	12	12.60	V
Load Impedance		45	50	55	Ω
Control voltage		0		10	V
Input impedance		10			kΩ

3. Performances

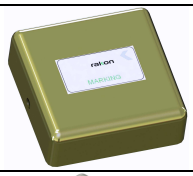
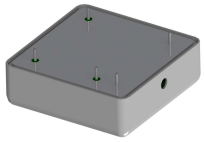
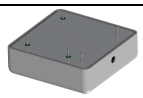
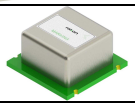
Parameters	Conditions/Remarks	Min	Typ	Max	Unit
Nominal Frequency		80		125	MHz
Relative pulling frequency range (negative slope)		± 2			ppm
Steady state supply current	Typical @ 25°C			2.2	W
Warm up supply current	Frequency achievement 5mn after start up @ 25°C			3.7	W
Initial frequency accuracy	@ 25°C ; Vc = Vcnom			± 0.5	ppm
Frequency stability vs temperature	Option A			± 0.1	ppm
	Option B			± 0.2	ppm
	Option C			± 0.5	ppm
Frequency variation vs. supply voltage	Vcc ±5% @25°C			± 0.01	ppm
Frequency variation vs. load	For ±10% variation of load			± 0.02	ppm
Frequency ageing after 30 days of continuous operation	1st year			± 0.5	ppm
	10 years			± 2	ppm
Allan Variance	1s			± 5E-12	
	After 10s			± 0.5	ppb
Frequency warm up				5	mn
G-sensitivity	Option SG: total Gamma			± 2	ppb/G
	Option LG: total Gamma			± 0.5	ppb/G
Output waveform		Sine			
Output level		11	13	15	dBm
Harmonics level				-25	dBc
Spurious level				-90	dBc

4. Minimum Guaranteed Phase Noise level

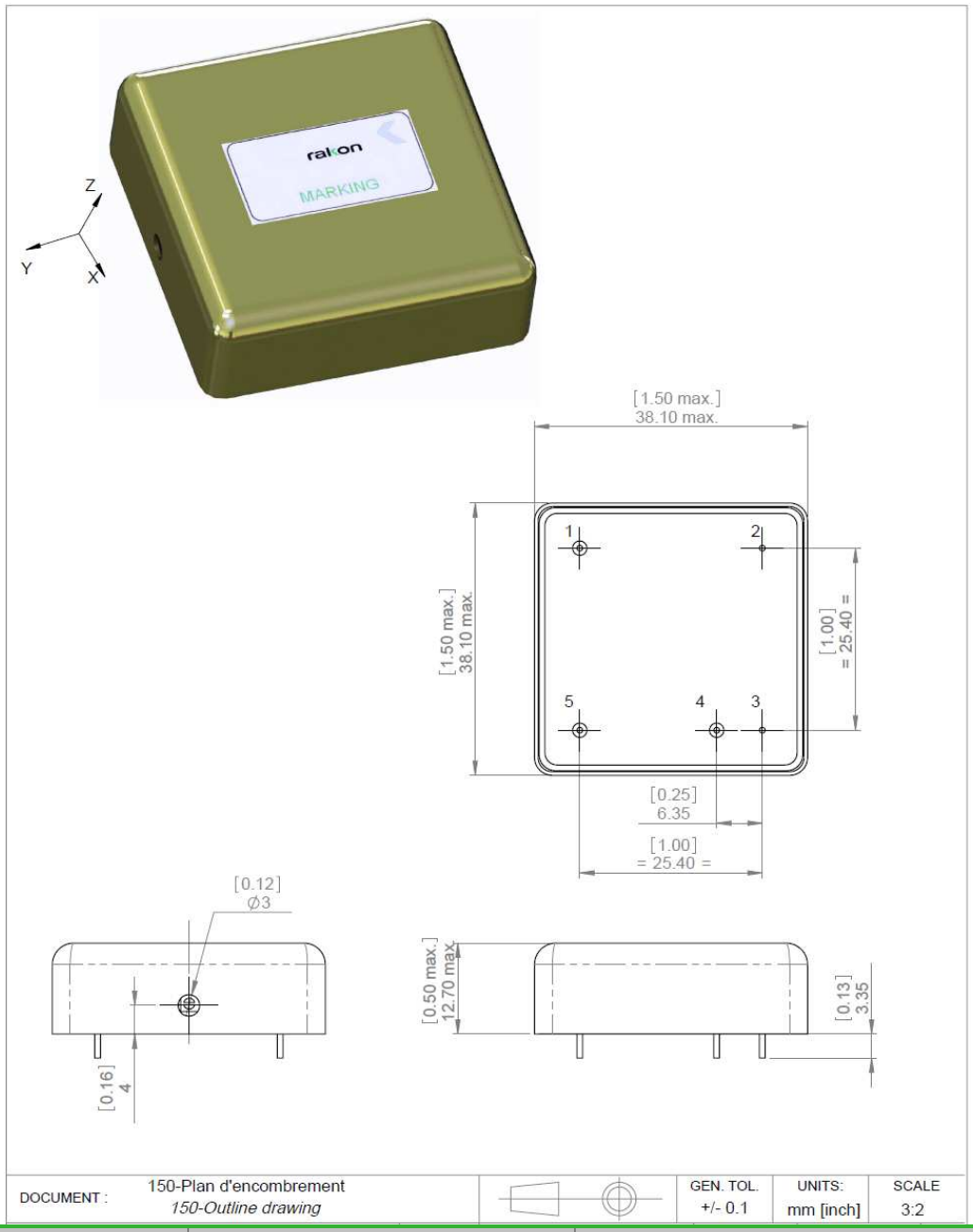
Parameters	Performance level	100 Hz	1 KHz	10 KHz	100 KHz	Unit
@ 100 MHz, 12 V -20°C to +70°C	58	-130	-1**58**	-172	-172	dBc/Hz
	62	-130	-1**62**	-175	-175	dBc/Hz
	65	-135	-1**65**	-178	-178	dBc/Hz

For performance levels at other frequencies or temperature ranges, please consult your sales office.

5. Mechanical features

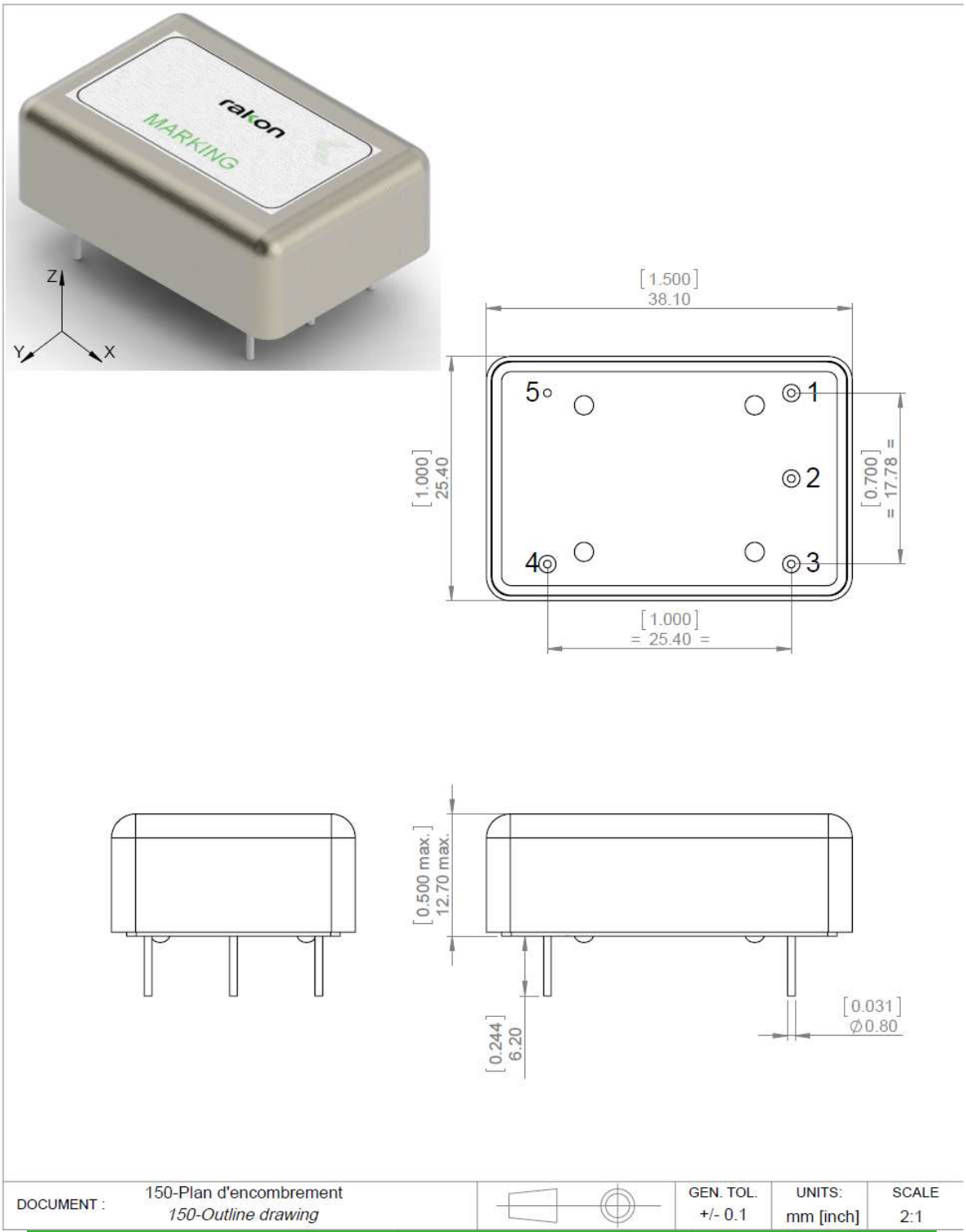
Package name	Description	Dimensions		
PTH1	Pin Through Hole	1.5”x1.5”x0.5” 38x38x13 mm		
PTH2	Pin Through Hole “Europack”	1.5”x1”x0.5” 38x25x13 mm		
PTH3	Pin Through Hole	1”x1”x0.5” 25x25x13 mm		
PSS1	Pin Side+SMA	2”x2”x1” 51x51x25 mm		
SMD1	SMD	1”x1”x0.5” 25x25x13 mm		

5.1. Package PTH1 (Pin Through Hole)



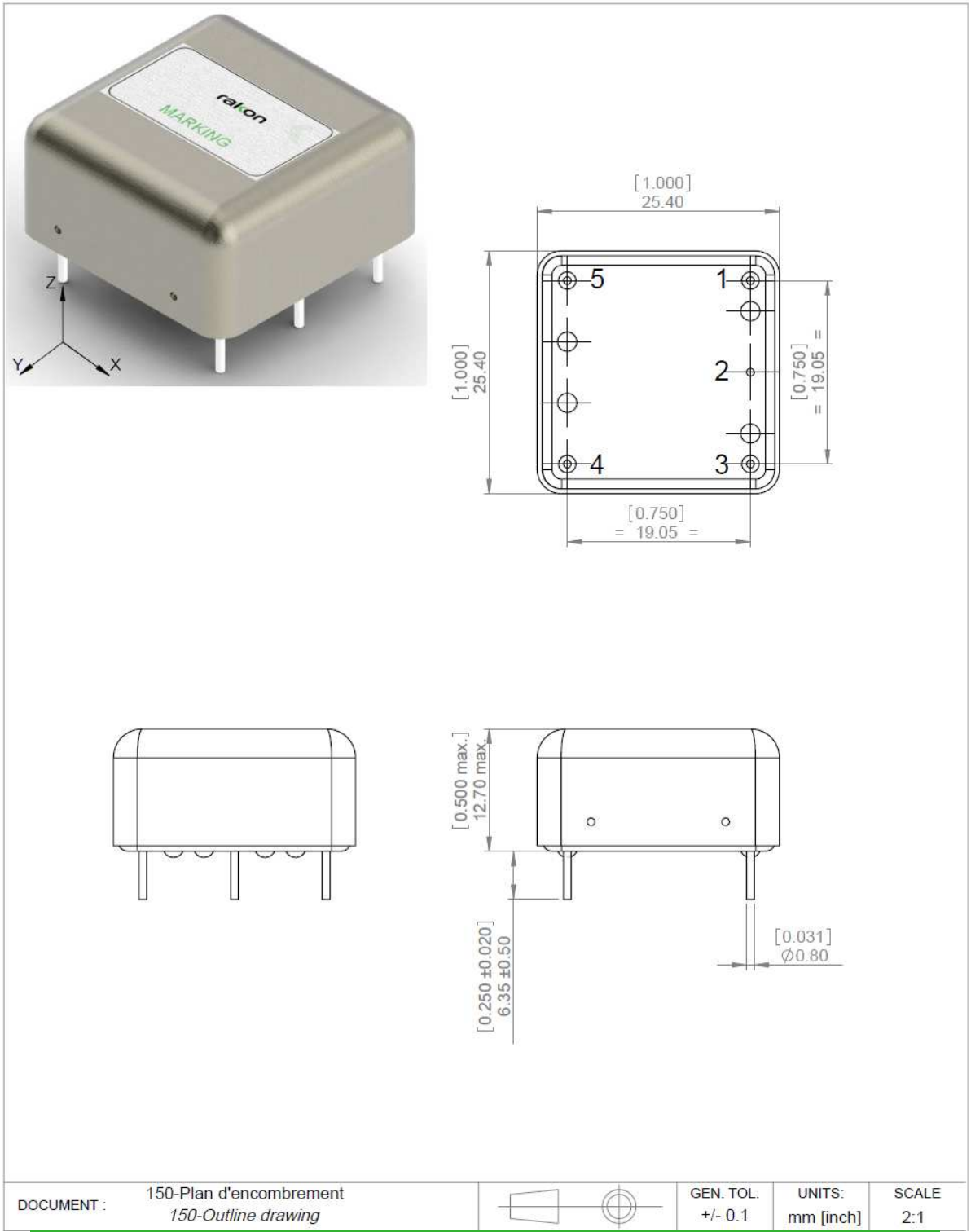
Pin number	Name	Description
1	Vcc	Supply voltage
2	GND	Electrical & mechanical ground
3	GND	Electrical & mechanical ground
4	Fout	Frequency output
5	Vc	Voltage control for electrical tuning

5.2. Package PTH2 (Pin Through Hole)



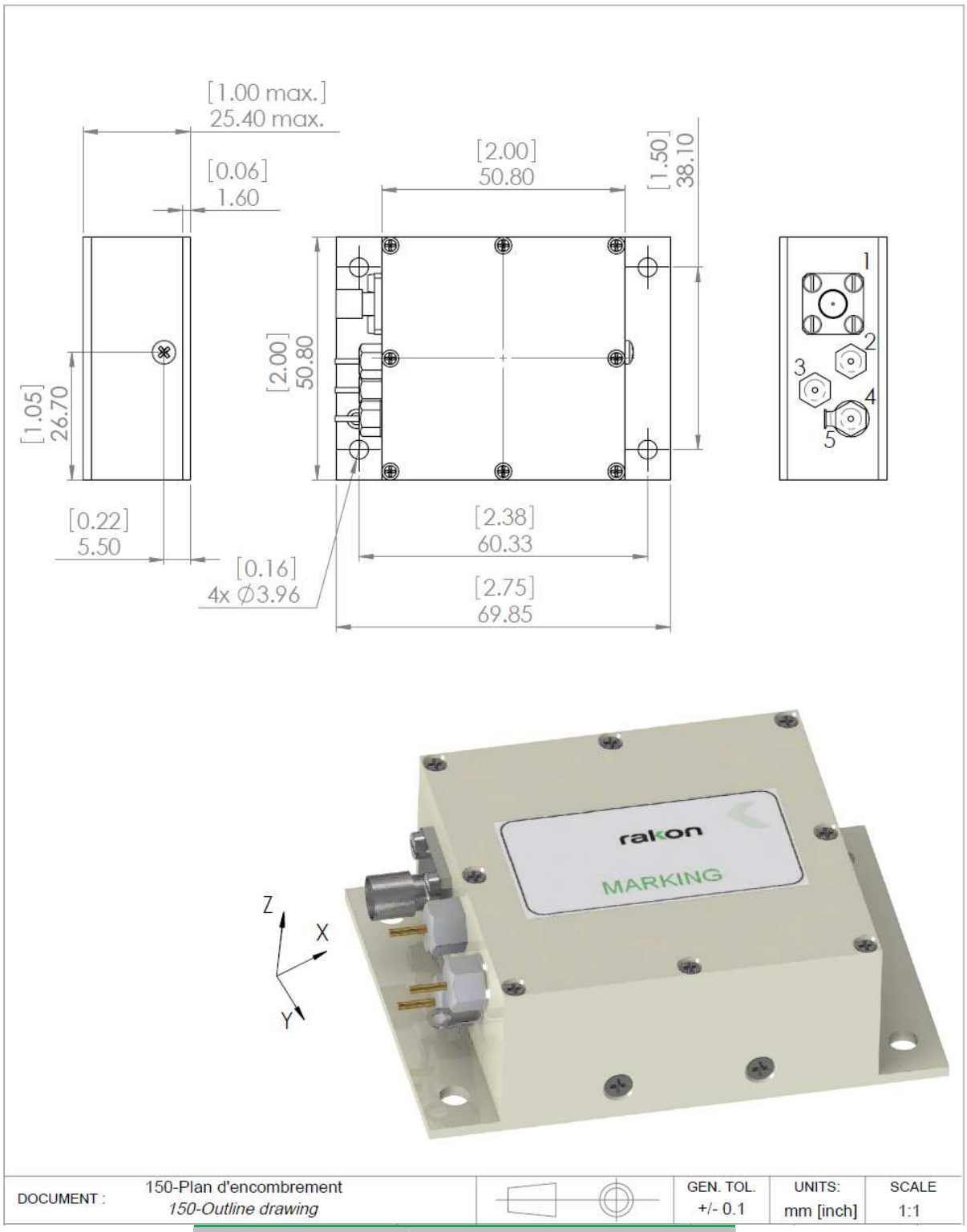
Pin number	Name	Description
1	Vc	Voltage control for electrical tuning
2	Vref	Voltage reference
3	Vcc	Supply voltage
4	Fout	Frequency output
5	GND	Electrical & mechanical ground

5.3. Package PTH3 (Pin Through Hole)



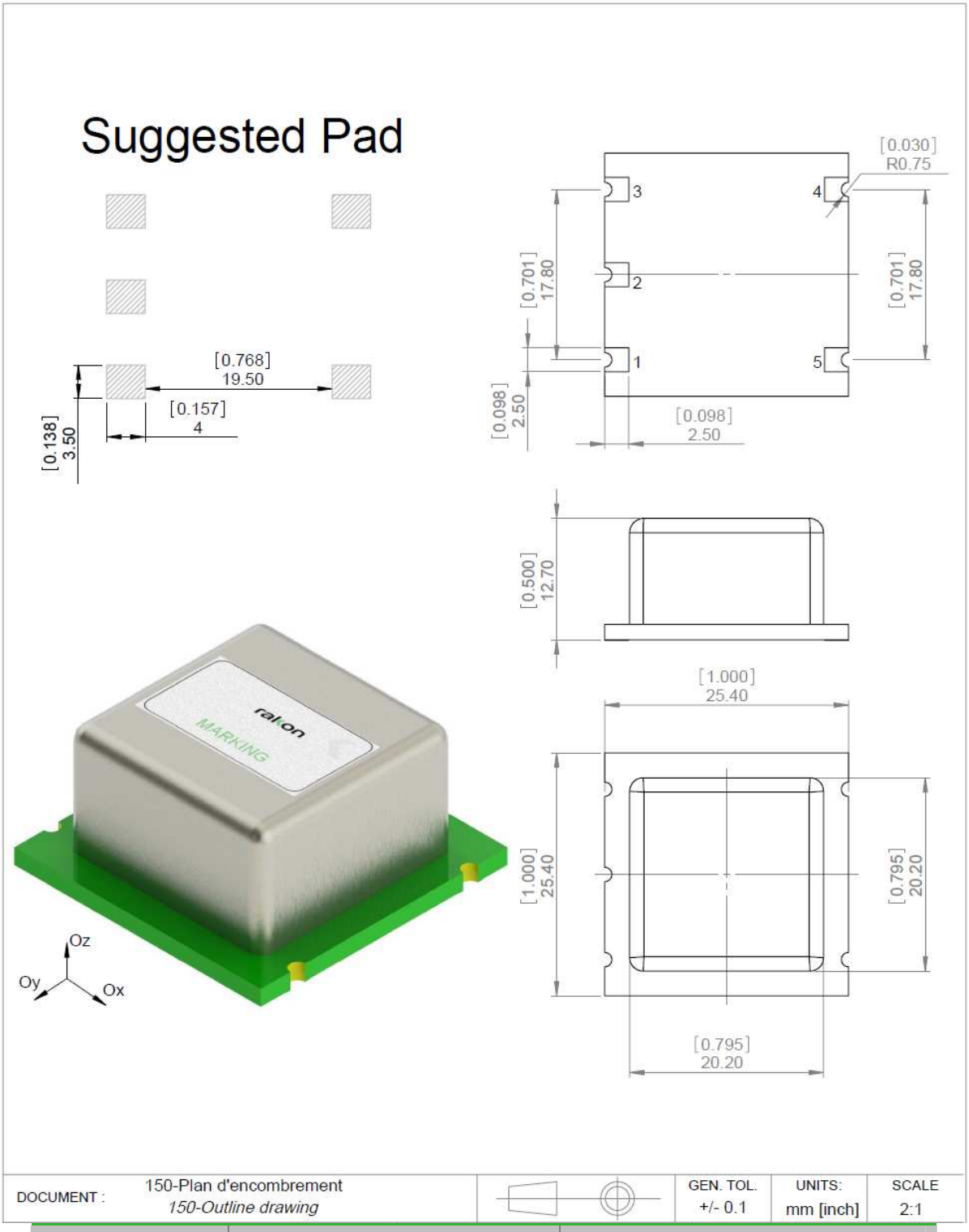
Pin number	Name	Description
1	Fout	Frequency output
2	GND	Electrical & mechanical ground
3	Vc	Voltage control for electrical tuning
4	GND	Electrical & mechanical ground
5	Vcc	Supply voltage

5.4. Package PSS1 (Pin Side+SMA)



Pin number	Name	Function
1	Fout	Frequency output
2	Vc	Voltage control for electrical tuning
3	Vref	Reference voltage
4	Vcc	Supply voltage
5	GND	Electrical & mechanical ground

5.5. Package SMD1 (Surface Mount Device)



Pin number	Name	Description
1	NC	Not Connected
2	NC	Not Connected
3	Vcc	Supply voltage
4	Fout	Frequency output
5	GND	Electrical & mechanical ground

6. Ordering part number definition

The part number breakdown is defined as follows: